



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/989,528	11/21/2001	Walter Kodim	030650-076	9946
27045	7590	11/12/2003	EXAMINER	
ERICSSON INC. 6300 LEGACY DRIVE M/S EVW2-C-2 PLANO, TX 75024			LEE, BENNY T	
			ART UNIT	PAPER NUMBER
			2817	

DATE MAILED: 11/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Art Unit: 2817

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the control circuit coupled to the low loss port as recited in claim 8 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the supply circuit coupled to the high-loss port as recited in claim 12 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CAR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was

Art Unit: 2817

made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4, 6-9, 1-13, 15, 16; 17, 20-23, 27; 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerley in view of the UK reference (both of record).

Kerley (fig. 3) discloses an AC signal switch comprising a power splitter configured using a directional coupler (302). Note the directional coupler comprises an input signal applied to a port adjacent input transmission line (304). The transmission lines (310, 316) define at least one “low-loss” primary line of the directional coupler (302) between the common input signal and low loss output signal (OUT 1). Note that at least one “high loss” coupled line (312, 314) includes a “high-loss” output (OUT 2) at one end of the coupled line while the opposite “isolated” end of the coupled line is terminated to an AC ground. As described at col. 4, l.58, the coupling between the primary and coupled lines (e.g. 310, 312) has a coupling factor of 8.34 dB. Thus, as known to those of ordinary skill in the art, a coupling factor of 3 dB corresponds to an equal power split between the primary and coupled lines. Therefore, it would stand to reason that power splits other than 3 dB would be unequal with the energy coupled being reduced in the coupled line (e.g. by 8.34) thereby resulting in a “high-loss” path. Note that a shunt switching element (i.e. diode 318) has one terminal thereof coupled to the low loss output line (306) adjacent output (OUT 1) and the other terminal terminated to AC ground. A control circuit (not shown) inherently would have applied a bias control (DC BIAS 1) to switch the diode (318) to AC

Art Unit: 2817

ground. Furthermore, note that a DC supply (not shown) inherently would have applied a DC voltage (DC BIAS 2) to the coupled line (314) at the isolated end of the coupled line.

Kerley fundamentally differs from the claimed invention in that the shunt diode switching element (318) is not terminated to AC ground by a termination element whose characteristic impedance matches of the unequal splitter when the switch is turned on.

The UK reference discloses an exemplary switching system whose primary benefit is to terminate to ground an unselected element (2) via a switch connection (9) to a resistor (10) whose characteristic impedance matches that of the unselected element. As known to those of ordinary skill in the art, a matched impedance termination avoids undesired signal reflections as compared to unmatched (e.g. open/short circuit) termination.

Accordingly, it would have been obvious in view of the references, taken as a whole, to have modified the shunt switching element of Kerley by adding a matched impedance termination between the switching element and AC ground as exemplarily taught by the UK reference.

Accordingly, in operation, when the input signal is desired for a specific path (i.e. primary or coupled), the corresponding diode switching element for the other path is turned on and the other path is shunt terminated to AC ground via a matched termination. Such a modification would have imparted the benefit of a matched termination (i.e. no reflections) for an unselected signal path, as exemplarily taught in the UK reference as compared to undesired reflections which may occur if the diode switch is turned on and directly connected to AC ground, thereby suggesting the obviousness of the combination.

Art Unit: 2817

With regards to claims 15, 16, 20-23, 27 although the Kerley reference does not explicitly reference to it's use with antennas, those of ordinary skill in the art would have recognized that AC switches of the type in Kerley are commonly and conventionally used in antenna applications. Note that the placement of antenna(s) relative to particular ports dictates their particular application. For example, an antenna at the common (i.e. input signal) port may suggest transmit/receive (e.g. mobile phone as per claim 27) operation whereas placement of antenna(s) at one or more output ports would have suggested multi-channel selection. Accordingly, given what was previously stated, it would have been obvious to have concluded that the use of the AC switch of the combination in antenna applications would have been an obvious design consideration.

Claims 5, 10, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the preceding rejection as applied to claims 4, 9, 11, respectively above, and further in view of Goldman et al (of record).

The above combination meets the claimed invention except for: the isolated port being terminated by a characteristic impedance matched termination; and the control and DC supply circuits including a low pass filter.

Goldman et al (Fig. 4) discloses a microwave coupler circuit which includes inter alia a terminating resistor (55) which couples the isolated port of coupled line (18) to ground and a low pass filter comprising inductor (66) and shunt capacitor (68) arranged such as to decouple microwave energy in the coupler from DC terminal (72).

Art Unit: 2817

Accordingly, it would have been obvious in view of the references, taken as a whole, to have: added a terminating resistor to the isolated port of the coupled line in the AC switch combination; and to have added low pass filters to the DC circuits providing control voltages (DC BIAS 1) and DC supply voltages (DC BIAS 2). Such modifications would have been considered obvious since terminating isolated ports in matched terminations provides the obvious benefit of preventing undesired signal reflections back into the switch, coupler and placing a low pass filter in the DC circuits obviously provides decoupling of DC voltages and the microwave signals of the switch coupler, thereby suggesting the obviousness of such a combination.

Applicant's arguments filed 20 August 2003 have been fully considered but they are not persuasive.

With respect to the drawing objections, applicants' comments & interpretation of the claim language in question is not found convincing. Note that both the recitation of the connections in claims 8 & 12 are in the alternative. This is interpreted by the examiner as providing a connection as one of the indicated ports. Accordingly, applicants' interpretation that a connection at one of the ports can encompass a connection at the other of the ports (via a "coupling") is not tenable. Therefore the drawing objection stands.

With respect to the rejection based on the prior art, applicants' have argued that the combination of references fails to teach and/or suggest a high loss and a low loss path as set forth in the claimed invention. It has been further argued that the coupler in Kerley is a cascade coupler whose overall coupling factor is 3 dB despite that the individual couplers of the cascade

Art Unit: 2817

arrangement provide 8.34 dB coupling factor. Furthermore, it has been argued that the termination in Nicholl will not be able to totally terminate reflections.

Such arguments have been considered, but have been found unpersuasive. It should be noted that, as set forth in the above rejection, the individual coupling sections (i.e. those with 8.34 dB coupling factor) can in and of themselves be considered coupling sections of unequal coupling factor, and applicants' have not distinguished that the coupler, as a whole, must have unequal coupling factor. Furthermore, it should be noted that the claims do not require that there be total and complete termination of signal reflections. Accordingly, the comb.

Claims 18, 19, 24-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

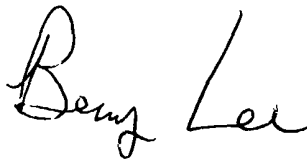
Application/Control Number: 989528

Page 8

Art Unit: 2817

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benny Lee whose telephone number is (703) 308 4902.

A handwritten signature in cursive script that reads "Benny Lee".

BENNY T LEE
PRIMARY EXAMINER
ART UNIT 2817

B. Lee

October 31, 2003